



SKILLSHEET 11.1

Simplifying ratios

Ratios are a way of comparing things. For instance, when we say that the ratio of boys to girls in a sports group is 4 : 3, it means that there are 4 boys for every 3 girls. A ratio is fully simplified when the two (or more) numbers being compared have been divided by the highest common factor.

WORKED EXAMPLE 1

Simplify the ratio 15 : 25.

THINK

Divide both numbers by the highest common factor of 5.

WRITE

$$\begin{aligned}15 : 25 \\ 3 : 5\end{aligned}$$

When the two quantities being compared have units displayed, the two quantities must be converted to the same unit first, before simplification. There are no units displayed in the simplified answer.

WORKED EXAMPLE 2

Simplify the ratio 3 t to 850 kg.

THINK

- 1 Convert 3 t to kilograms.
- 2 Divide by the highest common factor of 50.

WRITE

$$\begin{aligned}3 \text{ t} : 850 \text{ kg} \\ 3000 \text{ kg} : 850 \text{ kg} \\ 60 : 17\end{aligned}$$

Try these

Simplify the following ratios.

- | | | | | |
|-----------------------------------|--|-------------------------|------------------------|-----------|
| 1 a 8 : 12 | b 11 : 20 | c 4 : 6 | d 8 : 24 | e 10 : 16 |
| f 16 : 30 | g 18 : 24 | h 15 : 35 | i 14 : 18 | j 28 : 44 |
| 2 a 96 : 108 | b 5 kg to 20 kg | c 50 : 120 | d \$24 to \$60 | |
| e 64 : 96 | f 16 boys to 24 girls | g 100 : 125 | h 250 mL to 600 mL | |
| i 128 : 156 | j 480 Labor votes to 520 Liberal votes | | | |
| 3 a 10 : 8 | b 42 : 35 | c 12 : 9 | d 50 : 30 | e 16 : 6 |
| f 100 : 45 | g 24 : 9 | h 12 : 3 | i 17 : 10 | j 22 : 4 |
| 4 a 54 : 6 | b 24 adults to 20 children | c 63 : 28 | d \$75 to \$50 | |
| e 48 : 30 | f 200 cm to 40 cm | g 20 : 10 | h 45 rings to 27 rings | |
| i 85 : 60 | j 70 runs to 63 runs | | | |
| 5 a 30 cm to 1 m | b 400 g to 1 kg | c 4 cm to 18 mm | d 1 L to 350 mL | |
| e 50 cents to \$3 | f \$2.50 to \$1.50 | g 4 hours to 20 minutes | h 8 hours to 5 days | |
| i 4 hectares to 1 km ² | j 0.6 to 2.4 | k $\frac{1}{4}$ to 80% | l 15 months to 1 year | |



SKILLSHEET — ANSWERS

SKILLSHEET 11.1

Simplifying ratios

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|----------|-----------------|------------------|-----------------|------------------|------------------|
| 1 | a 2 : 3 | b 11 : 20 | c 2 : 3 | d 1 : 3 | e 5 : 8 |
| | f 8 : 15 | g 3 : 4 | h 3 : 7 | i 7 : 9 | j 7 : 11 |
| 2 | a 8 : 9 | b 1 : 4 | c 5 : 12 | d 2 : 5 | e 2 : 3 |
| | f 2 : 3 | g 4 : 5 | h 5 : 12 | i 32 : 39 | j 12 : 13 |
| 3 | a 5 : 4 | b 6 : 5 | c 4 : 3 | d 5 : 3 | e 8 : 3 |
| | f 20 : 9 | g 8 : 3 | h 4 : 1 | i 17 : 10 | j 11 : 2 |
| 4 | a 9 : 1 | b 6 : 5 | c 9 : 4 | d 3 : 2 | e 8 : 5 |
| | f 5 : 1 | g 2 : 1 | h 5 : 3 | i 17 : 12 | j 10 : 9 |
| 5 | a 3 : 10 | b 2 : 5 | c 20 : 9 | d 20 : 7 | e 1 : 6 |
| | f 5 : 3 | g 12 : 1 | h 1 : 15 | i 1 : 25 | j 3 : 7 |
| | k 5 : 16 | l 5 : 4 | | | |